8 POTENTIAL CARBON SEQUESTRATION IN IDAHO

There exists a number of existing practices and activities that could widely be adopted within the state, with the capability to increase carbon sequestration or reduce agricultural related emissions. Costs are typically the greatest barrier to their adoption. If costs are offset by supplemental income, such as through state, federal, or carbon market funds, then adoption would increase. Long-term operation and maintenance costs, however, may need to also be offset through productivity or sales of a product. If increased productivity of sales of products are not sufficient, then funding from outside sources would need to be available to continue the practice or activity. Carbon market funds could very well be used to supplement operation and maintenance costs.

Within carbon markets, there will be monitoring and verification of carbon sequestered. These requirements will increase costs, which will have to be addressed within the market. The actual amount of carbon sequestered or emission reduced may drive the level of funding, thus the more effective the practice, the high the value. Practices with low effectiveness, but high costs, are not likely to survive in a carbon market. The demand for highly effective practices with low to moderate installation, operation, and maintenance costs will be high. Monitoring and verification costs will also need to be low to moderate, or the practice may not fair well in a market. If practices provide a quick return on investment and are self-sustaining, paying for its own operation, maintenance, monitoring, and verification costs, then market viability may not be so important, where the practice may likely be adopted regardless of carbon market influences.

Based on preliminary evaluation of some practices and activities, the Committee has predicted that a carbon market is highly viable within the state. If the state and its landowners can prepare itself by creating a process to establish carbon credits, likely through existing agricultural and forestry programs, then marketing carbon credits should follow similar agricultural product marketing techniques. If, for instance, the Department of Commerce and private brokers, such as for grain, begin to include carbon credits with the product, the state can become well known for producing carbon credits. With an established process in place, from the encouragement of landowners to adopt practices, through the verification and marketing of carbon credits, outside funding sources will likely be attracted to the state, especially if the state is part of the marketing and tracking of carbon credits.

Before the state should begin establishing a carbon market of its own, or begin to market carbon credits, the process used to create carbon credits must be developed. One critical step towards developing a process is to steer additional research towards creating feasible verification techniques. Economic studies relative to adoption through verification also need to occur.

Those practices with the greatest potential to sequester carbon and/or reduce agricultural emissions seem to afforestation, nutrient management, no-till (direct seed), ethanol production, and methane reductions from ruminant animals and animal waste storage ponds. These were determined through a rigorous evaluation of the Advisory Committee and numerous other agricultural, forestry, and biofuels experts. A rating system was used to determine a practice's potential for adoption, operation, maintenance, costs, and other criteria. Each of the practice's predicted effectiveness was then evaluated against its predicted state-wide adoption. This provided the Committee with a good understanding of each practice and how it may effect a carbon market. The practice ratings are found in Appendix 3, and each practice's potential state-wide effectiveness in Appendix 4.

Before wholly adopting this initial evaluation and prediction of a state-wide potential carbon sequestration, the Committee has recommended further analysis, economic and research related activities on many practices, many related. This initial step, however, has provided valuable insight on the needs of

the state regarding carbon sequestration knowledge, economic benefits, and verification procedures. In determining the potential statewide benefit of carbon sequestration and markets, some assumptions have to made.

The first assumption made is the available land area or product is suitable for practices, such acres of wheat, barley, and corn for ethanol production or croplands likely suitable for afforestation, which changes its use. Another assumption is the maximum land area that a specific practice would be adopted on or would produce for alternative uses, different than current uses. Costs are considered but it was assumed that if costs were not overcome by any means, the practice would not be adopted, regardless of other criteria, therefore temporarily set-aside for the sake of predicting its adoption within a carbon market. Another assumption is that no more than any one crop market would not tolerate more than 25% of it being lost to other uses, such with ethanol production, where initial estimates are based on no more than 25% of the small grain market would be used. Nor would it likely be that practices such as afforestation, replace more than 20% of existing pastureland and cropland with trees. Similar thought went into each practice to ensure a reasonable carbon sequestration and emission reduction estimates. For the purpose of estimating a state-wide potential, only some selected practices with the greatest CO2e level were selected, instead of simply summing all available practices for each land use category below. It cannot be assumed that all practices can be applied to the same field or forest tract, but a one or a few. The practices found in Table 9. below represent those that could be applied within the state without effecting local crop markets and the best practices or activities.

Table 9. Potential Statewide Carbon Sequestration

Practice/Activity	**CO_2e Million Metric Tons/y**
Cropland related	6.9
Forest land related	2.6
Livestock related	2.1
Grazing land related	1.5
Ethanol & biodiesel production	1.1
Riparian & wetland area related	0.4
Total Potential CO2e, selected practices	**14.6**

If there were about 14.6 million metric tons of CO2e offsets (credits) produced in the state, and these offsets were purchased at $10 per metric ton, then the state could see $146 million dollars come into the state. Oregon passed a law in 1997 that requires new utilities to emit less than 17% of the most efficient plant available. New energy facilities can meet this requirement at the plant or pay a per-ton CO2 offset of $0.57 to the Climate Trust which then purchases offsets, provided through various agricultural and forest practices. Using the Oregon rate per-ton CO_2 offset rate of $0.57, Idaho could see a benefit of $8 million. Regardless of the per-ton price of CO_2 offset, there could be significant amount of funds come into the state through a carbon market. Because of practice related installation, operation, maintenance, and monitoring costs, the owner of the practice may only see 25 to 50% of these amounts. However, if most of those practice related needs were supplied from within the state, the state economy would appreciate most of those funds.